Author Index

Alonso-Amo F, Maté J L, Morant J L and Pazos J, From Epistemology to *Gnoseology*: Foundations of the Knowledge Industry 140

Ball J T, book review 190
Battle S A. *See* Gammack J G et al.
Berman B J, Artificial Intelligence and the Ideology of Capitalist Reconstruction 103
Bijl A, Computer Discipline and Design Practice (*book review*) 96
Boden M A, The Philosophy of Artificial Intelligence (*book review*) 190

Candelaria de Ram S, book review 188
Cantu-Ortiz F J. *See* Liebowitz J and Cantu-Ortiz F J
Castelfranchi C and Conte R, Emergent Functionality Among Intelligent Systems: Cooperation Within and Without Minds 78
Casti J, A Lost Paradigm (*book review*) 295
Chen Z, Remarks on Intelligence as Extended Retrieval and Its Implications 367
Collins H M, Artificial Experts: Social Knowledge and Intelligent Machines (*book review*) 94
Combi M, The Imaginary, The Computer, Artificial Intelligence: A Cultural Anthropological Approach 41
Conte R. *See* Castelfranchi C and Conte R
Cox K. *See* Gorayska B and Cox K
Cui J. *See* Gammack J G et al.

Dreyfus H L and Dreyfus S E, What Artificial Experts Can and Cannot Do 18
Dreyfus S E. *See* Dreyfus H L and Dreyfus S E
Drozdek A, Moral Dimension of Man and Artificial Intelligence 271

Ennals R, book review 298, 391

Fileni F, Culture and Knowledge: Hypothesis on the Interpretation of Post- Industrial Society 382
Fogarty T C. *See* Gammack J G et al.
Foray D and Freeman C, Technology and the Wealth of Nations: The Dynamics of Constructed Advantage (*book review*) 390
Freeman C. *See* Foray D and Freeman C

Gammack J G, Fogarty T C, Battle S A, Ireson N S and Cui J, Human-Centred Decision Support: The IDIOMS System 345
Gill K S
  book review 96
  Editorial: Culture and Technology 1
  Editorial: From Efficiency to Effectiveness 303
  Editorial: Future with *AI & Society* 195
  Editorial: Unmasking the Deliquent Genius 101
Goonatilake S, The Evolution of Information: Lineages in Gene, Culture and Artefact (*book review*) 294
Gorayska B and Cox K, Expert Systems as Extensions of the Human Mind: A User Oriented, Holistic Approach to the Design of Multiple Reasoning System Environments and Interfaces 245

Heidegger G, Machines, Computers, Dialectics: A New Look at Human Intelligence 27
Heise R. *See* Witten I H et al.
Hoenen M. *See* Steven E et al.

Ireson N S. *See* Gammack J G et al.

Johnson G J, Talking About Computers: From Metaphor to Jargon 263

Kelly J, The Ontological Status of Computers or What is a Computer? 305
Kloth M. *See* Steven E et al.

Laufer R, The Social Acceptability of AI Systems: Legitimacy, Epistemology and Marketing 197
Leith P, book review 191
Liebowitz J and Cantu-Ortiz F J, Expert System Technology Transfer Strategies: Selected Cases from the United States and Mexico 324
Liebowitz J. *See* Zeide J S and Liebowitz J

MacDonald B A. *See* Witten I H et al.
Marcer P J, Quantum Computation and the Conscious Machine – The Reason Why Computers Will Never be Smarter than People 88
Marzano G, IDSSs Opportunities and Problems: Steps to Development of an IDSS 115
Maté J L. *See* Alonso-Amo F et al.
Maulsby D L. *See* Witten I H et al.
Mazzoli G, The Evolving Model of Communication in Sociotechnical Systems 221
Mey J L, Adaptability: Reflections 180
Mey J L and Tamura H, Barriers to Communication in a Computer Age 62
Morant J L. *See* Alonso-Amo F et al.

Nolan J, The Computational Metaphor and Environmentalism 50

Partridge D, book review 394
Pazos J. *See* Alonso-Amo F et al.

Rauner F, Working and Learning in a Car Repair Shop: Are Expert systems a Solution? 373
Rosenbrock H, Science, Technology and Purpose 3

Satofuka F, book review 295
Senghaas-Knobloch E, Ambivalent Attitudes Towards Technical Progress and Steps to Overcome Them: Reflections and Results of an Empirical Investigation 232
Smith G W, Computers and Human Language (*book review*) 188
Steven E, Hoenen M and Kloth M, Testability of Expert Systems in System Development and Application 337
Stonier T
  Beyond Information: The Natural History Intelligence (*book review*) 393
  Information and the Internal Structure of the Universe (*book review*) 391

Tamura H. *See* Mey J L and Tamura H
Thorpe J, book review 97
Tzonis A, Hermes and the Golden Thinking Machine (*book review*) 186

Unseld G, AI – and Everything Else 280

Witten I H, MacDonald B A, Maulsby D L and Heise R, Programming by Example: The Human Face of AI 166

Zeide J S and Liebowitz J, Institutionalizing Expert Systems: Guidelines and Legal Concerns 287

Subject Index

Abduction 154
Accidental cooperation 82
Action 33
Adaptability 180
Aesthetics 197
AGENT 268
Ancillary utilities 258
Anthropomorphism 305
Apprenticeship 326
Argumentation 201
Artificial communication 221
Artificial experts (*book review*) 94
Artificial intelligence (AI) 18, 41, 51
  and ideology of capitalist reconstruction 103
  and moral dimension of man 271
  and natural intelligence 372
  as social phenomenon 280
  development 42
  epiphany of 108
  first domains of 274
  Hermes and the Golden Thinking Machine (*book review*) 186
  human face 166
  hypercognitive approach in 82
  limits of 59
  methodology in 58–60
  philosophy of (*book review*) 190
  research rationale 275
  social acceptability 197
Attention focusing 166, 175
Attitude 58
Automated transit system 65
Automating routine office tasks 170

BASIL 168, 176, 177
Body-mind relations 41
Bremen study 232

Capitalist reconstruction 103
Car repair shop, expert systems 373
Casuality 3
Categorial framework 305
Centralization 325
Circumscription 140, 159
Classification 350
CLERK 170, 176, 177
Cognition 18
Cognitive agents 78
Cognitivism 51
Cognitivistic knowledge concept and performance 337
Collaborative assessment 121
Collective memory 385
Common sense 387
  informed 160
  knowledge 140
  psychology 197
Communication
  analogic and digital ways of 382
  and control 181
  barriers 62
    linguistic aspects 68
  evolving model of 221
  model 122
  new modes of 182
  philosophy of 73
  purpose of 71
  structures 74
Complex system technology 377
Complexity 27
  of work 377
Computational metaphor 50
Computer-aided diagnostic and service systems 379
Computer discipline, and design practice (*book review*) 96
Computer discourse 264
Computer science, language of 263
Computer software, possible areas of improvement 75
Computer terminology 263
Computers
  and complexity of human brain 35
  and everyday life 37
  and human language intersection (*book review*) 188
  as artificial mind 307

  as instruments 309
  as persons 310
  as tools 308
  defining 306
  development as mind tools 305
  in philosophical context 305
  ontological status 305
  real nature of 307
Computing, defining 306
Connectionism 18, 278
Conscious machine 88
Constraint graph 358
Constraint networks 350, 355
Constraints 175
Constructed advantage, dynamics of (*book review*) 179
Contracts 290
Control theory 3
Cooperation 78
Cooperative cognitive plan 84
Cooperative cost-benefit discussion 232
Creativity 221
Crisis 103
CS-PROLOG 121
CTA 385–7
Cultural anthropology 41
Cultural diversity 41
Cultural modality which is mainly digital (CMD) 384–6
Cultural tending towards analog form (CTA) 384
Cultural values, economization of 240
Culture 41
  and knowledge 382
  and technology 1
  of the artificial 197
Culturization of economy 240
CYDSA 329

DAI 78
Damage control 177
DARPA 277
Data-wisdom hierarchy 148
Database querying 345
Decentralization 325
Decision guiding system 258
Decision rules 349
Decision support 345
  intelligent systems 115
Definite negation 27
Delinquent genius 101
Design practice and computer discipline (*book review*) 96
DEVS 126
Dialectics 27
Disclaimers 291

Ecology 50
Economy, culturization of 240
Effectiveness 303
Efficiency 303
EICON 135
Emergent functionality 78
Encore Computer Corporation 328
Engineering responsibility 242
Environmental impact assessment 115
Environmentalism 50
  relevant psychological findings 55
Epistemology 197
ETAR 171, 176
Ethics 271
Expert systems 18, 116
  as extensions of the human mind 245
  car repair shop 373
  essential components of institutionalization 288
  examination by experts and users 341
  impact of culture and organization 332
  institutionalizing 287
  legal issues relating to development and deployment 289
  practical and social difficulties with using 248
  technology transfer 324
  testability of 337
  user-oriented interfaces 249
Expertise 18
Explanations 245, 255

Feasibility 238
Felicity conditions 178
Finality 27
Functional cooperation 85

Game playing 274
Genetic algorithms 354, 355
Globality, aspects of 384
Gnoseology 140
GPS 274, 275
Grapevine 76
Grass roots strategy 326
Groups 75
Grupo CYDSA 329

Hermes and the Golden Thinking Machine (*book review*) 186
Human brain, complexity of 35
Human categorisation 316
Human-centred decision support 345
Human-centred systems design 44
Human-centredness 1, 166
Human-computer interaction 74, 180
Human-computer interface 62, 63
Human-computer relations 41
Human-computer terminology 310
Human consciousness 316
Human environment 67
Human factor dilemma 128
Human information-processing 27
Human intelligence 27
Human intent 316
Human interface 355
Human language-computer intersection (*book review*) 188
HYLSA 330
Hypercognitive agents 78

IDIOMS 345
  architecture 351
  decision rules 349
  design 350
  example 360
  future work 364
  human-centred design philosphy 357
  human interface 355
  interaction with system 357
  overview 346
  use of system 359
IDSSs. *See* Intelligent decision support systems (IDSSs)
Imagining 33
Implementation 287
Induction 176
Inductive inference machine 370
Inductive inference via queries 370
Inference and inference methods 140, 152, 367
Informatics, test and verification in 340
Information
  and internal structure of the universe (*book review*) 180
  evolution of (*book review*) 294
Information processing systems (IPS) 281, 282
Information technology in community and voluntary sector (*book review*) 298
Information transfer 62
Informed common sense 160
Institutionalization 287
Instructible systems 166
Integration 223
Intellectual property rights 292
Intelligence
  as extended retrieval 367
  natural history of (*book review*) 180
Intelligent advising 117
Intelligent analysis 118
Intelligent decision support systems (IDSSs) 115
  advising function 133
  deep mechanisms of 125
  environmental impact assessment 130
  human factor dilemma 128
  implementation problems 128
  scenario construction 135
  system functional architecture 131
  technical difficulties 130
  uncertainty representation in 126
Intelligent evaluation 120
Intelligent machines 45
  (*book review*) 94
Intelligent simulation 121
Intelligent systems 78
Intentional cooperation 83
Intentional stance 166
Intentionality 173, 305, 318
Interactive drafting assistant 168
Interdisciplinary dialogue 232
Internal Revenue Service (IRS) 327
Intersubjectivity 50
IRMA 135
ITESM 331, 332

Jargon 263, 267

Knowledge
  and culture 382
  as translation from analogic into digital way of communication 383
  in multi-cultural context 387
  object of 209
  production and transmission of 386
  structures 152
  subject of 209
Knowledge acquisition 337, 338, 341
Knowledge-based systems 245, 345
Knowledge discovery 367
  as extended database retrieval 369
Knowledge engineering 287
Knowledge industry 140
Knowledge integration 115
Knowledge investigation 338
Knowledge of the world 160
Knowledge representation 152
Knowledge retrieval 367
  as limited inference vs inference as extended retrieval 368
Knowlege types 151
Kobe City, Japan 65

Language of computer science 263
Learner personification 172
Learning 18
Learning paradigm 174
Legal concerns 287
Legitimacy 197
  rational-legal system 205
Liability 291
Linguistics 62
LISP 121
Locus of control 251
Logic theorist 274
Logical contradiction 27

Machine intelligence 1
Machine learning 166, 176, 367
Machines and everyday life 37
Management 103
Management information systems 347
Marketing 197
Material resources 145
Metacommunication 383
Metaphor 58, 263, 267, 269, 309
  abuse of 266
  teaching 166, 172
Mindfacturing 140, 143, 145, 149
Model of man 271
Modelling
  advantages of 342
  methods 337
Monolithic characteristic 385
Moral dimension of man and artificial intelligence 271
Multiple reasoning system environments and interfaces 245

MYCIN 126
Mythology 310

Natural history of intelligence (*book review*) 180
Natural intelligence 203
  and artificial intelligence 372
Natural language facility 250
Natural language interpretation, user in 253
Natural language processing 53, 275
Negligence 291
Networking 75
Neural networks 18
New technologies 221
Noise problem 177

Objective cooperation 82
Out-designed cooperation 84
Outsourcing 325
Ownership/strategic affiliation 326

Participation microworld 124
PC MS-WINDOWS 133
PCOX 135
Perfection 72
Person 305
Personal computers 63
Phenomenology 50
Post-industrial society 382
Postmodernism 197
Premature baby 67
Problem-conscious engineers 232
Productive Thinking 55
Professional responsibility 232
Programming by example 166
  examples of 168
  principles for 172
PROLOG 121, 337
PROSPECTOR 126
Purpose 3

Quantum computation 88
Query inductive inference 370
Query inference machine 370

Rational understanding 317
Raw material 148
Reality 225
Reasoning 245
  user requested strategies 256
  variations in 257
Redundancy of meaning 385
Relations of continuity 385
Reliability 337, 340
Robot programming by example 171

SACON 126
SALOMON 127
Science-Technology binomial 142, 145
Scientific management 105
SCP 279
Second Industrial Revolution 105
Selectivity 221
Self-generated user models 253
Self-learning 27
Serendipity effect 76
SHRDLU 53
SIMAN 126
Skill 18
Social acceptability 197
Social action, levels of 80
Social compatibility 232
Social complexity 221
Social interaction 81
Social knowledge (*book review*) 94
Society of Information 145
Socio-technical system 221
SONAR PLEXUS 126
Sophism 197
Speech acts 62, 68
  public or private? 70
  theory 69
STAIRS 135
Statements 319
Strategic computer program 277
Strict liability 292
Subjective cooperation 82
Subjectivity 345
Symbol 305
System analysis 201
System solutions 342

Tasks
  procedural representation of 174
  simple abstract model 176
Taylorism 6
Teaching metaphor 166, 172
Technical-economic innovational dynamic 235
Technical progress 232
Technological change 103
Technological selection 223
Technology
  and wealth of nations (*book review*) 179
  assessment 232
  new 221
Technology transfer, expert systems 324
TELS 169, 176, 177
Testability of systems 339
Text editing 169
Texts 319
Theorem proving 274
Third Industrial Revolution 107
T-PROLOG 121
Tutorial computer-aided diagnostic and service systems 379

Underdetermination of theory 3
Undo facility 177
User
  in natural language interpretation 253
  self-generated models 253
User-accepted standards 248
User comprehension 249
User interfaces 245
User requested explanations 255
User requested reasoning strategies 256

Validation 341, 342
Validity 337, 340

Warnings 291
Warranties 291
Wealth of nations and technology (*book review*) 390
Weltanschauung 238
Word processors 64